2016 UDOT RESEARCH PROBLEM STATEMENT

****** Problem statement deadline is March 14, 2016. Submit statements to Tom Hales at tahales@utah.gov. ******

Title: Utilizing Vehicle-To-Infrastructure Connectivity For Increased Safety **No. (office use):** 16.03.11

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UDOT Champion (suggested):

Select One Subject Area

- ☐ Materials/Pavements
- ☐ Maintenance
- ☒ Traffic Mgmt/Safety
- ☐ Preconstruction
- ☐ Planning

1. Describe the problem to be addressed.

To find the best way to adapt existing infrastructure to leverage the most safety benefits from the increasing number of "smart" vehicles on Utah roads. Vehicle-to- infrastructure connectivity (V2I).

2. Explain why this research is important.

Vehicle communication and autonomous systems are quickly being implemented into newly available automobiles. Safety improvements and benefits from these improved vehicles is greatly exploited only when they can communicate with existing traffic and community infrastructure. Connecting existing infrastructure with even a few of these improved vehicles on the road could significantly improve overall driving safety and data flow.

3. List the research objective(s):

1. Select several existing systems that could best provide or utilize useful information from connected vehicles.
2. Outline plans for scaling this system as the number of connected vehicles increases on UDOT roads. (Including uses for the USDOT and FCC dedicated vehicle communication bandwidths).

4. List the major tasks:

1. Identify existing systems that could provide or utilize useful information from connected vehicles.
2. Identify options for scaling this system as the number of connected vehicles increases on UDOT roads and dedicated vehicle communication becomes more common.
3. Select three priorities that could be most beneficial for vehicle-to-infrastructure communication.

5. List the expected results:

1. List of priority infrastructure to utilize for maximum safety benefits.
2. Three priority applications selected and one priority fully pursued to preliminary test phase.

6. Describe how this research will be implemented.

A research matrix will be followed to document and record all work.

- Each priority will be pursued individually to identify needs, feasibility, safety benefits, and obstacles limiting connected vehicle communication within each.
- This research will seek to coordinate with current related UDOT ITS research as much as possible.
- Vehicle communication systems, types, availability, etc. will be reviewed and used to further determine greatest safety benefits and feasibility.
- Coordination needs will be identified and communicated with involved parties for the particular priorities identified.
- Regulations and options will be reviewed concerning the federally designated vehicle communication bandwidth.
- The ongoing USDOT SmartCities Challenge initatives and outlines will also be reviewed and followed for national

recommendations, updates, and conclusions concerning connected-vehicle and infrastructure communications.

- The best priority selected from the review process and research matrix criteria will then be pursued as far as possible to prepare for preliminary testing and implementation as determined from the research steps.

7. Requested from UDOT: $15000 **Other/Matching Funds:** $ **Total Cost:** $15000

8. Outline the proposed schedule, including start and major event dates.

April 1 - Start Research Project

April 15 - Research matrix and scope identified
- Begin research of selected applications

July. 1 - Narrow research to single application

Aug. 15 - Provide research overview and next steps for preliminary test
- End Research